HYDROGEN RELIEF VALVE SIZING FOR THE MUCOOL VACUUM VESSEL   / API

Relief Valve for the Vacuum vessel (25 liters of H2 to vaporize from the vacuum vessel)

Calculation of the relief flow capacity

Massflow H2 (g/s) *calculated w/ the vessel wetted area, 25 liters of H2, and 20W/m^2 of flux	197.300	$W = 7.93 * \dot{m}$
W, flow capacity (lbs/hr)	**1566.0**	

Calculation of the relief valve area

W (lbs/hr.)	1565.970	
M (hydrogen)	2.020	
Temperature at maximum flow rate (R)	520.000	
Z (-)	1	
C (hydrogen)	357.000	
Kd, coeff. of discharge	0.975	$A = \dfrac{W\sqrt{TZ}}{C K_b K_d P_1 \sqrt{M}}$
Kb, capacity corrector factor	1	
Pressure drop on the relief line (psi)	0.2	
P1, upstream relief pressure (psia)	25.2	
Area, of the relief valve (in^2)	**2.864**	
Equivalent diameter (in)	**1.910**	

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